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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/812,030	03/19/2001	Rong Lin	87687.042301/R-1265-125	9309
34799	7590	02/25/2004	EXAMINER	
THOMAS R. FITZGERALD, ESQ. 16 E. MAIN STREET, SUITE 210 ROCHESTER, NY 14614-1803			DO, CHAT C	
			ART UNIT	PAPER NUMBER
			2124	

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/812,030

Applicant(s)

LIN, RONG

Examiner

Chat C. Do

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 3/19/01;5/24/01;7/2/01;6/14/01;10/21/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-26 and 38-57 is/are allowed.
- 6) ☒ Claim(s) 1-3,6-10,27 and 29-36 is/are rejected.
- 7) ☒ Claim(s) 4,5,11,28, and 37 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the abstract exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

3. Claims 2, 5, 7, 12, 40, and 53 are objected to because of the following informalities:

Re claim 2, the number "0" in line 1 should be removed.

Re claim 5, the phrase "claim 4further" in line 1 should be replaced with "claim 4 further".

Re claim 7, the phrase "claim 6comprising" in line 1 should be replaced with "claim 6 comprising".

Re claim 12, the phrase "the shift bar" in line 4 should be replaced with "the last shift bar" for referring to the previous shift bar.

Re claim 40, the phrase "of claim 39" in line 3 should be removed.

Re claim 53, the examiner considers this claim depends on claim 52.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 30-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 30, the limitation "the first, second, and output" in line 1 lacks an antecedence basis. For examination purposes, the examiner considers this limitation as "a first, second, and output". Claims 32 and 34 have the same problem.

Thus, claims 31, 33 and 35 are also rejected for being dependent on the rejected base claims 30 and 34 respectively.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 6-10, 27, 29-30, 34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Rong Lin ("Fast Multiplier Schemes using Large Parallel Counters and Shift Switches").

Re claim 1, Rong Lin discloses in Figure 2 (either  $S<2,1>$  or  $S<4,1x1+2x0>$ ) a shift bar circuit for receiving one or more independent binary input signals (x) and converting binary signals into a state signal (R) having one unique bit and representative of the input binary signals.

Re claim 2, Rong Lin further discloses a restoration circuit connected to the state signal for restoring the state signal to a desired voltage level (e.g. pull-up transistors as seen in Figure 4).

Re claim 3, Rong Lin further discloses a carry circuit coupled to the outputs of each shift bar circuit for generating an output corresponding to carry bits generated by the shift bar circuit (q or quotient in Figure 2 to the next stage).

Re claim 6, Rong Lin discloses in Figure 6 a shift switch parallel counter having one bar circuit (each block/box in Figure 6) for receiving one binary input signal of weight 1 and one shift bar binary input signal of weight 1, and producing a binary sum bit of weight 1 (light solid line) and a binary carry bit of weight 2 (heavy solid line).

Re claim 7, Rong Lin further discloses a shift switch parallel counter compressing two inputs bits into two output bits ( $S<2,1>$  in Figure 3).

Re claim 8, Rong Lin further discloses one binary input signal of weight 1 and further comprising a second shift bar binary input signal of weight 1, and producing a binary sum bit of weight 1 and a binary carry bit of weight 2 (similar in Figure 6).

Re claim 9, Rong Lin further discloses a shift switch parallel counter compressing three inputs bits into two output bits (Figure 5).

Re claim 10, Rong Lin further discloses one binary input signal of weight 1, three shift bar binary input signals of weight 1, and a binary input carry signal of weight 1, and producing a binary sum bit, a binary carry bit of weight 2, and one binary output signal of weight 2 corresponding to an in-stage carry bit generated by the shift bar circuits (Figure 5 part a).

Re claim 27, Rong Lin discloses in Figure 7 two or more stages of parallel counters (e.g. (7,3) and (3,2)), each stage reducing a number of input bits into a smaller number of output bits and the last stage reducing the number of its input bits to two output bits (3,2).

Re claim 29, Rong Lin further discloses a final adder circuit (3,2).

Re claim 30, Rong Lin further discloses a first, second, and output numbers are integers expressed in binary form (Figures 7 and 8).

Re claim 34, it has same limitations cited in claim 30. Thus, claim 34 is also rejected under the same rationale in the rejection of rejected claim 30.

Re claim 36, it has same limitations cited in claim 30. Thus, claim 36 is also rejected under the same rationale in the rejection of rejected claim 30.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 32 is rejected under 35 U.S.C. 103(a) as being obvious over Rong Lin ("Fast Multiplier Schemes using Large Parallel Counters and Shift Switches").

Re claim 32, Rong Lin discloses the first, second, and output numbers are integers expressed in binary form (Figures 7 and 8). Rong Lin does not disclose a Booth recoding is used to encode the first and second numbers for multiplication. However, the examiner takes an official notice that the Booth recoding for encoding in multiplication is well known in the art. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a Booth recoding for encoding in multiplication in Rong Lin's invention because it would enable to simplify circuitry in generating the partial products in multiplication.

***Allowable Subject Matter***

10. Claims 12-26 and 38-57 are allowed.
11. Claims 4-5, 11, 28, and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
12. Claims 31-33 and 35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 6,101,520 to Lan et al. disclose an arithmetic logic unit and method for numerical computations in Galois Fields.
- b. U.S. Patent No. 5,227,994 to Ohki Mitsuharu discloses an inner product calculating circuit.
- c. U.S. Patent No. 5,060,183 to Sakashita et al. disclose a parallel multiplier circuit using matrices, including half and full adders.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do



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Examiner

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February 19, 2004



TODD INGBERG  
PRIMARY EXAMINER